CLAIMS

1. An electric contact switching device comprising:

an energizing contact;

a transient current contact; and

a capacitor,

wherein the energizing contact and the transient current contact are connected electrically in parallel with each other, and the energizing contact and the transient current contact can do timely controlled making and breaking operations, and

wherein said capacitor is connected in series with said transient current contact.

2. The device according to claim 1, wherein the transient current contact is in making state during the breaking operation of the energizing contact.

3. The device according to claim 1 or 2, wherein an electric resistance or a switch is connected in parallel with the capacitor.

4. The device according to claim 1, 2, or 3, wherein the capacity of the capacitor is set so that, when breaking the energizing contact, and when a current value which flows through the energizing contact falls below the minimum arc discharge current value of the energizing contact, a voltage between the energizing contacts falls below the minimum arc discharge voltage value.

5. The device according to claim 1, 2, 3, or 4, wherein the capacitor is characterized so that the voltage

V of the energizing contact is set to the capacity that doesn't exceed the voltage V≒Tm/3200 (Tm: melting point temperature of the energizing contact) or V≒Tb/3200 (Tb: boiling point temperature of the energizing contact).

6. The device according to claim 1, 2, 3, 4, or 5, further comprising mechanical or electrical making and breaking means for the transient current contact, based on a making and breaking signal of the energizing contact.

7. The device according to claim 1, 3, 4, or 5, comprising a rectification circuit instead of the transient current contact, said rectification circuit rectifying the current that flows into the capacitor to save electric charge in the capacitor during the breaking operation of the energizing contact.

8. The device according to claim 7, comprising the transient current contact connected in series with the rectification circuit.

9. An electric contact switching device comprising:

an energizing contact, a transient current contact and an inductance,

wherein the energizing contact and the transient current contact are connected electrically in parallel with each other, and the energizing contact and the transient current contact can do timely controlled making and breaking operations, and

wherein said inductance is connected in series with said transient current contact.

10. The device according to claim 9, wherein the transient current contact is in making state during the making operation of the energizing contact.

11. The device according to claim 1, 2, 3, 4, 5, 6, 8, 9, or 10, wherein the energizing contact and the transient current contact consist of semiconductor switches.

12. A power consumption control circuit comprising:

a power supply;

a load; and

the switching device according to claim 1, 2, 3, 4, 5, 6, 8, or 11,

wherein the load and the power supply are connected, and

wherein the switching device is connected in series with the load, wherein a transient current contact is in making state and a transient current from the power supply flows into a capacitor during a breaking operation of an energizing contact, and wherein a transient current path through the load and an internal resistance of the power supply suppress the voltage rise at the energizing contact.

13. A power consumption control circuit comprising:

a power supply;

a load; and

the switching device according to claim 9, 10, or 11,

wherein the load and the power supply are connected, and

wherein the switching device is connected in series

with the load, wherein a transient current contact is in making state after making the transient current contact and a transient current of the power supply which flows through the transient current contact is restored to a regular value.

14. A DC motor which contacts by turns a pair of brushes connected to the power supply with a pair of commutators provided on both ends of an armature, respectively, to send the direct current through the armature placed in a magnetic field, and to rotate the armature in response to an electromagnetic force,

wherein, for the commutators to be electrically connected electrically in parallel with each other when contacted to the brush, each commutator has two contacts aligned in the direction of rotation and the capacitor connected in series with the contact at the back side of the direction of rotation.

15. A pantograph device with a movable energizing contact to an overhead wiring, comprising:

a pair of pantographs; and

a capacitor,

wherein each pantograph is arranged to be connected electrically in parallel with the overhead wiring, and

wherein the capacitor is connected in series with one of the pantographs.

16.

A connector to conduct a socket side energizing line

connected to a socket and a plug side energizing line connected to a plug by connecting the socket and the plug, comprising:

a socket side branch line;

a plug side branch line; and

a capacitor,

wherein the socket side energizing line has a socket side energizing contact,

wherein the socket side branch line is branched from the socket side energizing line and has a socket side transient current contact,

wherein the plug side energizing line has a plug side energizing contact,

wherein the plug side branch line is branched from the plug side energizing line and has a plug side transient current contact,

wherein the capacitor is disposed either on the socket side branch line or the plug side branch line, and

wherein the socket side energizing contact and the plug side energizing contact are made when the socket is connected to the plug, and the socket side transient current contact and the plug side transient current contact are made when the socket is connected to or removed from the plug, and wherein, while maintaining the making state, the socket side energizing contact and the plug side energizing contact are broken to remove the socket from the plug.

17. A pulse generation device comprising:

a rotor with rotating electrodes;

contact electrodes; and

capacitors,

wherein the rotating electrodes are electrically separated from each other with an isolator, symmetrically arranged for a rotating axis of the rotor,

wherein the rotating electrodes comprise front side electrodes and back side electrodes connected electrically in parallel with each other to a power supply, and the contact electrodes make and break contact with the rotating electrodes during rotation of the rotor and contact the front side electrodes and the back side electrodes step by step, and

wherein the capacitors are connected in series with the backside electrodes.